

CLAIMS

1. A method of managing fingers for multipath signals in a wireless communication device, said method comprising the steps of:

a) receiving said multipath signals said wireless communication device;

5 b) acquiring one of said multipath signals in a searcher portion of said wireless communication device;

c) determining a signal-to-noise ratio (SNR) ratio level of said one of said multipath signals;

10 d) evaluating said one of said multipath signals for categorization into one of a plurality of states;

e) generating a finger assignment by selectively providing said one of said one of said multipath signals for a demodulation operation based upon its state;

f) receiving said finger assignment from said searcher portion of said communication device;

15 g) determining a signal-strength for said finger assignment;

h) enabling said finger assignment for a combine operation if said signal-strength for said finger assignment satiates a first signal-strength threshold; and

20 i) preventing said finger assignment from being deassigned if said signal-strength of said finger assignment satiates a second threshold, said second signal-strength threshold being less than said first signal-strength threshold.

2. The method recited in Claim 1 wherein said plurality of states includes three hierarchical states.

25 3. The method recited in Claim 1 wherein said plurality of states includes an assigned state, wherein signals associated with said assigned state are used for an active demodulation operation.

4. The method recited in Claim 1 wherein said plurality of states includes a potential state, wherein signals associated with said potential state are not actively used for an active demodulation operation, but which may be likely candidates for a future demodulation operation.

5. The method recited in Claim 1 wherein said plurality of states includes a temporary state, wherein said temporary state is not actively used for an active demodulation operation, but which may be likely candidates for categorization in a potential state in a future evaluation.

6. The method recited in Claim 1 wherein said one of said multipath signals is categorized per step c) according to said SNR level of said one of said multipath signals.

7. The method recited in Claim 1 wherein said one of said multipath signals is categorized per step c) according to a time period over which said SNR level of said one of said multipath signals exists.

8. The method recited in Claim 3 further comprising the step of:
f) enabling said one of said multipath signals for said demodulation operation if it is categorized in said assigned state.

9. The method recited in Claim 1 wherein said steps a) through e) are repeated to provide a quantity of multipath signals at least equivalent to a number of fingers in a receiver portion of said wireless communication device.

10. The method recited in Claim 1 further comprising the step of:

j) determining a time period over which said signal-strength of said finger assignment satiates said second signal-strength threshold.

5 11. The method recited in Claim 10 further comprising the step of:

k) preventing said finger assignment from being deassigned if said time period satiates a time threshold.

12. The method recited in Claim 10 further comprising the step of:

10 k) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said time threshold.

13. The method recited in Claim 1 further comprising the step of:

15 j) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said second signal-strength threshold.

14. The method recited in Claim 1 further comprising the step of:

j) demodulating said finger assignment.

20 15. The method recited in Claim 1 further comprising the step of:

j) filtering said signal-strength of said finger assignment as determined in step b).

16. The method of Claim 1 further comprising the step of:

25 j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment.

17. The method of Claim 10 further comprising the step of:

j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment and based upon said time period over which said signals strength exists.

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18. The method of Claim 16 further comprising the step of:

f) evaluating said finger assignment for said combine operation or for deassignment based upon its state.

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19. A wireless communication device for managing multipath signals and for managing a finger assignment, said communication device comprising:

a searcher adapted to scan for said multipath signals;

a transceiver coupled to said searcher;

a processor, said processor coupled to said searcher; and

a computer readable memory unit, said computer readable memory unit coupled to said processor, said computer readable memory unit containing program instructions stored therein that execute, via said processor, and cause the processor to perform the steps of:

a) receiving said multipath signals at said wireless communication device;

b) acquiring one of said multipath signals in a searcher portion of said wireless communication device;

c) determining a signal-to-noise ratio (SNR) level of said one of said multipath signals;

d) evaluating said one of said multipath signals for categorization into one of a plurality of states; and

e) generating a finger assignment by selectively providing said one of

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said one of said multipath signals for a demodulation operation based upon its state;

f) receiving said finger assignment;

g) determining a signal-strength for said finger assignment;

5 h) enabling said finger assignment for a combine operation if said signal-strength for said finger assignment satiates a first signal-strength threshold; and

i) preventing said finger assignment from being deassigned if said signal-strength of said finger assignment satiates a second threshold, said
10 second signal-strength threshold being less than said first signal-strength threshold.

20. The method recited in Claim 19 wherein said plurality of states
includes three hierarchical states.

15 21. The method recited in Claim 19 wherein said plurality of states includes an assigned state, wherein signals associated with said assigned state are used for an active demodulation operation.

20 22. The method recited in Claim 19 wherein said plurality of states includes a potential state, wherein signals associated with said potential state are not actively used for an active demodulation operation, but which may be likely candidates for a future demodulation operation.

25 23. The method recited in Claim 19 wherein said plurality of states includes a temporary state, wherein said temporary state is not actively used for

an active demodulation operation, but which may be likely candidates for categorization in a potential state in a future evaluation.

24. The method recited in Claim 19 wherein said one of said multipath
5 signals is categorized per step c) according to said SNR level of said one of said multipath signals.

25. The method recited in Claim 19 wherein said one of said multipath
signals is categorized per step c) according to a time period over which said SNR
10 level of said one of said multipath signals exists.

26. The method recited in Claim 21 further comprising the step of:
f) enabling said one of said multipath signals for said demodulation
operation if it is categorized in said assigned state.

27. The method recited in Claim 19 wherein said steps a) through e) are
repeated to provide a quantity of multipath signals equivalent to, or greater than,
a number of fingers in a receiver portion of said wireless communication device.

28. The method recited in Claim 19 further comprising the step of:
j) determining a time period over which said signal-strength of said finger
assignment satiates said second signal-strength threshold.

29. The method recited in Claim 28 further comprising the step of:
k) preventing said finger assignment from being deassigned if said time
25 period satiates a time threshold.

30. The method recited in Claim 28 further comprising the step of:
k) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said time threshold.

5 31. The method recited in Claim 19 further comprising the step of:
j) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said second signal-strength threshold.

10 32. The method recited in Claim 19 further comprising the step of:
j) demodulating said finger assignment.

15 33. The method recited in Claim 19 further comprising the step of:
j) filtering said signal-strength of said finger assignment as determined in step b).

 34. The method of Claim 19 further comprising the step of:
j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment.

20 35. The method of Claim 28 further comprising the step of:
j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment and based upon said time period over which said signals strength exists.

25 36. The method of Claim 34 further comprising the step of:
k) evaluating said finger assignment for said combine operation or for deassignment based upon its state.

37. A computer readable medium containing therein computer readable codes for causing an electronic device to implement a method of managing said multipath signals, said method comprising the steps of:

- a) receiving said multipath signals at said wireless communication device;
- b) acquiring one of said multipath signals in a searcher portion of said wireless communication device;
- c) determining a signal-to-noise ratio (SNR) level of said one of said multipath signals;
- d) evaluating said one of said multipath signals for categorization into one of a plurality of states; and
- e) generating a finger assignment by selectively providing said one of said one of said multipath signals for a demodulation operation based upon its state;
- f) receiving said finger assignment;
- g) determining a signal-strength for said finger assignment;
- h) enabling said finger assignment for a combine operation if said signal-strength for said finger assignment satiates a first signal-strength threshold; and
- i) preventing said finger assignment from being deassigned if said signal-strength of said finger assignment satiates a second threshold, said second signal-strength threshold being less than said first signal-strength threshold.

38. The method recited in Claim 37 wherein said plurality of states includes three hierarchical states.

39. The method recited in Claim 37 wherein said plurality of states includes an assigned state, wherein signals associated with said assigned state are used for an active demodulation operation.

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40. The method recited in Claim 37 wherein said plurality of states includes a potential state, wherein signals associated with said potential state are not actively used for an active demodulation operation, but which may be likely candidates for a future demodulation operation.

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41. The method recited in Claim 37 wherein said plurality of states includes a temporary state, wherein said temporary state is not actively used for an active demodulation operation, but which may be likely candidates for categorization in a potential state in a future evaluation.

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42. The method recited in Claim 37 wherein said one of said multipath signals is categorized per step c) according to said SNR level of said one of said multipath signals.

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43. The method recited in Claim 37 wherein said one of said multipath signals is categorized per step c) according to a time period over which said SNR level of said one of said multipath signals exists.

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44. The method recited in Claim 39 further comprising the step of:
f) enabling said one of said multipath signals for said demodulation operation if it is categorized in said assigned state.

45. The method recited in Claim 37 wherein said steps a) through e) are repeated to provide a quantity of multipath signals equivalent to, or greater than, a number of fingers in a receiver portion of said wireless communication device.

5 46. The method recited in Claim 37 further comprising the step of:
j) determining a time period over which said signal-strength of said finger assignment satiates said second signal-strength threshold.

10 47. The method recited in Claim 46 further comprising the step of:
k) preventing said finger assignment from being deassigned if said time period satiates a time threshold.

15 48. The method recited in Claim 46 further comprising the step of:
k) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said time threshold.

20 49. The method recited in Claim 37 further comprising the step of:
j) allowing said finger assignment to be deassigned if said finger assignment fails to satiate said second signal-strength threshold.

50. The method recited in Claim 37 further comprising the step of:
j) demodulating said finger assignment.

25 51. The method recited in Claim 37 further comprising the step of:
j) filtering said signal-strength of said finger assignment as determined in step b).

52. The method recited in Claim 37 further comprising the step of:

j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment.

5 53. The method recited in Claim 46 further comprising the step of:

j) categorizing said finger assignment into one of a plurality of states based upon said signal-strength of said finger assignment and based upon said time period over which said signals strength exists.

10 54. The method recited in Claim 52 further comprising the step of:

k) evaluating said finger assignment for said combine operation or for deassignment based upon its state.